

1926

Current Research Projects
of the
U. S. Bureau of Public Roads

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The following is a condensed statement of the status of the more important research projects of the Bureau of Public Roads current on December 31, 1926.

Motor Truck Impact Tests. - The impact tests are still one of the most active researches of the bureau. Tests to determine the effect of the thickness of tread rubber on impact reaction have been completed and the data are being analyzed. Looking toward the practical application of impact studies to highway engineering design and motor vehicle regulation the bureau is engaged in a program of field tests wherein actual pavement surfaces of various degrees of roughness are being compared in connection with the other major variables of tire equipment, load, and speed. It is expected that the data obtained will give valuable practical information on the magnitudes of the impact reactions to be expected when known conditions of the four major impact variables obtain.

A study of the instrumentation is being pursued by both theoretical and experimental methods with the idea of knowing definitely the accuracy of the data under the several test conditions.

Vibrolithic Concrete Tests. - One-year tests of vibrolithic and normal concrete slabs have been completed. A report will be published shortly in Public Roads.

Other Concrete Tests. - A series of field tests is in progress for the purpose of comparing the several methods of curing concrete pavements. In addition studies are in progress for the following purposes: To determine the effect of reinforcing on the distribution of transverse cracks; to measure the coefficient of subgrade friction; to make experimental comparison of three methods of concrete-pavement curing in cooperation with the State of Maryland; to develop methods of protecting concrete against alkali and salt water with special reference to the use of water-gas tax; to investigate the water-cement-ratio method of proportioning concrete, in cooperation with the New Jersey State highway department; to make fatigue tests of mortar and concrete and tests of the expansion and contraction of concrete subjected to various moisture and temperature conditions, in cooperation with Purdue University; to study the relation between the strength of Portland cement and the strength of the concrete in which it is used, in cooperation with the State highway laboratories; and an elaborate series of tests on the effect of the type and quality of coarse aggregate on the resistance of concrete subjected to repeated frost action.

Bridge Tests. - Tests of two experimental bridge slabs constructed for the purpose of determining the value of the floor design of the Philadelphia-Camden bridge have been completed.

Stability of Bituminous Paving Mixtures. - In cooperation with the American Association of State Highway Officials, a series of tests is under way to determine the relative stability of compressed cylindrical specimens of bituminous mixtures at 140°F., 77°F., and 39°F.

In addition to this an extensive survey of roads in the far western States is being conducted for the purpose of developing an intermediate-cost bituminous surface suitable for that section. The South Carolina State highway department is cooperating also in a study of the various bituminous surface treatments for earth roads.

Subgrade Investigations. - The most active investigation is that which has for its purpose a logical classification of soils with regard to their physical properties. The investigation aims at the development of correlated subgrade information with respect to the soil types shown on the maps of the U. S. Bureau of Soils. This will make these valuable maps of still greater usefulness to the highway engineer.

The investigation includes laboratory studies in cooperation with the Massachusetts Institute of Technology and field observations of the relationship between soil types and road surface conditions.

Highway Transport Surveys. - Traffic surveys similar to those already published are completed in Pennsylvania and Ohio, and reports, now in preparation, will be published in a short time. Other surveys have been completed in New Hampshire and Vermont.

The following researches and tests are also in progress: investigations to develop and standardize certain tests for concrete aggregates; investigations to develop and standardize the direct tensile test for concrete and the stability test for bituminous mixtures; studies in cooperation with the University of North Carolina, to determine the strength of various kinds of culvert pipe under actual fills, field studies of land slides in relation to highway location, construction, and maintenance, in Ohio and West Virginia; and the effect of highway improvement on rural land values.

Probably one of the most important investigations is that aimed to discover the causes of low efficiency in road-construction methods with special reference to grading operations and the mixing and placing of concrete in pavements.